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Dear Sir or Madam

Re: Response to Written Opinion
PCT Patent Application No: PCT/SG03/00078
Applicant: Malaysia Woodworking Pte Ltd
Title: Fabrication of Hollow Door Using Modular Panel Rib Components
Made from Scrap Wood
Our ref: 1237.P004PCT/CKM

We refer to the above PCT patent application and the written opinion dated 30 July 2003.

Attached is our response further clarifying how the present invention is novel and inventive over the cited prior art.

We look forward to a favourable reply.

Thank you.

Yours sincerely
LAWRENCE Y D HO & ASSOCIATES PTE LTD


Chan Kay Min

Encl: Response to Written Opinion for PCT/SG03/00078

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Response to Written Response for PCT/SG03/00078

We are happy to note that the examiner has found Claims 6-8, 14, 16 and 17 novel. We would like to respond to the examiner's written opinion by first addressing the cited prior art before turning to the inventive step of the present invention.

In US 1,887,814 (Le Gall), the invention is for a hollow panel formed by plywood sheets with a network of interlaced wood strips between the panels. These strips are joined by any suitable means and secured at right angles to the panels.

In line 40 of the first page of the patent document for that invention, the inventor teaches how a block of curved wood plies can be sawed up to form curved strips. It is clear that the inventor's intention is to render wood or plywood blocks into suitable strips specifically for the expressed purpose of practicing the invention.

In that invention, there is no difference in the processing of wood material for this invention than for the fabrication of any other wood products. In other words, wood is machined specifically into sufficiently large pieces for use as specific parts of a wood furnishing or furniture item. There is also no mention of joining two or more smaller pieces of wood to form a structural element of adequate dimensions should a sufficiently large piece of raw material be not available.

This is contrasted with the present invention where the intention is not to use large, whole or continuous pieces of wood material, as far as possible. Our intention is to render waste wood or off-cuts into usable components so as to reduce the waste stream for wood. With waste wood in plentiful supply, there may not be any need to use any whole or long pieces of wood to practise the present invention, making it more "friendly" to the environment.

The second cited prior art, US 2,288,104 (Pasquier), teaches a ventilated hollow panel, fabricated with a core containing communicating cells within, so that the product does not warp with changes in time and moisture content. The core is made of all identically cut intersecting and interfitting strips (eg see lines 37-38 of the first page; lines 7-8 and 24-25 of the second page of the patent document). This regularity may also be seen in the figures of that patent document.

That invention is different from the present invention as it is again obvious that continuous strips of wood are used for strength and the arguments presented for the first cited prior art apply here as well.

The last cited prior art, US 4,894,974 (Mayhew et al) is for a structural interlock frame system, particularly for prefabricated structural wall panels. Other than the use of tabs that fit into slots of the panel walls, the use of continuous "ribs" with "indentations" that interlock the ribs is similar to that of the other two cited prior art.

The common feature of the three cited prior art are the equivalent interlocking strips or ribs. Interlocking strips in woodworking have been used hundreds of years ago in Japanese woodworking joinery, particularly for the construction of *shoji* screens. Japanese *shoji* screens have their intersecting ribs consecutively

notched on alternate sides such that each strip of wood seems to have been "weaved" between the perpendicular strips it is connected with.

One would think that the three American patents cited above would have been anticipated by this traditional craft form. But perhaps the American policy of considering only US inventions as prior art (that is, the United States does not consider absolute prior art or prior art from other countries) may have allowed these three patents to be granted.

On the other hand, the present invention is a novel and inventive way of rendering short, hitherto unusable pieces of wood into usable components for a hollow door or panel. We respectfully contend that the three cited patents, as well as the techniques of Japanese woodworking joinery, do not anticipate present invention. While long, continuous pieces of wood may be used in the present invention, the emphasis is to have the bulk of a hollow door or panel fabricated with off-cuts or waste wood material (paragraph 42).

This objective may be achieved by forming strips with complementary notches (eg, paragraphs 32 and 33, and FIG. 2 of the present application), mortise and tenon joints, or tongue and groove interfaces (paragraph 34). Another aspect of the method of the present invention is to use intermediary connector blocks to join pieces that are too short (paragraph 35 and FIG. 3).

While the above woodworking techniques allow the modular components or complementary strips to be joined, the present invention is not limited to these methods of joinery. The modular components may also be joined by conventional woodworking fasteners such as nails, tacks or screws (paragraph 40; FIG. 3).

On the requirement of the inventive step, we respectfully contend that the present invention is inventive as the use of wood material off-cuts as structural members is not obvious. This is evident from the lack of attempts to join and use off-cuts in finished products such as hollow doors and panels throughout the years as the craft of carpentry is developed.

In fact, the trend in this art is to use lightweight paper honeycomb cores for hollow doors and panels and to dispense with long strips or ribs (paragraph 7). This is because long, continuous strips of wood are expensive and are getting more expensive by the day as deforestation progresses at alarming rates around the world, particular in the tropics. The present invention is non-obvious as it points away from this trend of using paper cores for hollow doors and panels.

The current thinking in conventional carpentry is to only use continuous strips of wood that are long enough to be used as a strip. It is not obvious to join two shorter pieces to form a sufficiently long rib or strip, let alone to form modular components from very short pieces of wood. The current thinking is that strength in the finished product is paramount; that use of strips is limited to full-length strips.

The present invention can be seen as novel and inventive as woodwork factories continue to produce waste wood and dispose of it without any attempts to extend the use of this waste wood in the actual fabrication of products. The conventional view is that such off-cuts are merely useful for use as support or backing material

when drilling or planing wood, for stirring and mixing paint (which actually does require sufficiently long pieces of wood) or for pulping into paper products. What cannot be used is dumped or incinerated.

One analogy that may be useful to support our argument and to differentiate the present invention from the prior art of interlocking strips is that of carpenters mixing wood dust or fine chips with an adhesive or bonding agent such as animal glue, to fill large holes, dents or defects in wood furniture. This traditional carpentry practice should not be seen as anticipating the many inventions of wood composite materials where wood dust or chips are mixed with, and formed with polymers as bonding agents. Accordingly, the cited prior art also does not anticipate the present invention.

The arrangement of the interlocking strips of the present invention is inventive and is not limited to being connected at right angles. Flexibility in joining the strips is increased by the novel and inventive use of connector blocks. The intermediary connector block may be rectangular, circular or polygonal (FIG. 3) and allows great latitude in the pattern of latticework possible (paragraphs 35 to 38; FIGS. 1B and 5B). In addition, connector blocks of the present invention also allow use of thin strips by locking them side by side to form a thicker rib (FIG. 2). The connector blocks allow for greater usage of scarp wood in the present invention.

Thus, we respectfully contend that the rendering of waste wood material into modular components, and using other elements such as connector blocks to form the supporting ribs or strips in hollow doors and panels, is inventive. The cited prior art simply does not anticipate the application of short, "useless" pieces of waste wood material as significant components in the manufacture of wood furnishings, particularly for hollow doors and panels.

We sincerely hope that the Examiner will reconsider the present application in the light of the points presented above and we look forward to a favourable reply. Nevertheless, we request the Examiner for additional opportunities to submit amendments or arguments in the future as appropriate and opportune.

Thank you.